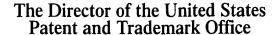
ARTIFACT SHEET

Enter artifact number below. Artifact number is application number + artifact type code (see list below) + sequential letter (A, B, C.). The first artifact folder for an artifact type receives the letter A, the second B, etc Examples: 59123456PA, 59123456PB, 59123456ZA, 59123456ZB Indicate quantity of a single type of artifact received but not scanned. Create individual artifact folder/box and artifact number for each Artifact Type.						
CD(s) containing: computer program listing Doc Code: Computer pages of specification and/or sequence listing and/or table Doc Code: Artifact Content unspecified or combined Doc Code: Artifact Artifact Type Code: S Content unspecified or combined Doc Code: Artifact Artifact Type Code: U						
Stapled Set(s) Color Documents or B/W Photographs Doc Code: Artifact Type Code: C						
Microfilm(s) Doc Code: Artifact Type Code: F						
Video tape(s) Doc Code: Artifact Type Code: V						
Model(s) Doc Code: Artifact Type Code: M						
Bound Document(s) Doc Code: Artifact Type Code: B						
Confidential Information Disclosure Statement or Other Documents marked Proprietary, Trade Secrets, Subject to Protective Order, Material Submitted under MPEP 724.02, etc. Doc Code: Artifact Artifact Type Code X						
Other, description: Doc Code: Artifact Type Code: Z						

The United States of America



Has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this

United States Patent

Grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America for the term set forth below, subject to the payment of maintenance fees as provided by law.

If this application was filed prior to June 8, 1995, the term of this patent is the longer of seventeen years from the date of grant of this patent or twenty years from the earliest effective U.S. filing date of the application, subject to any statutory extension.

If this application was filed on or after June 8, 1995, the term of this patent is twenty years from the U.S. filing date, subject to any statutory extension. If the application contains a specific reference to an earlier filed application or applications under 35 U.S.C. 120, 121 or 365(c), the term of the patent is twenty years from the date on which the earliest application was filed, subject to any statutory extensions.

Director of the United States Patent and Trademark Office

ALLESS Brenda Moore



United States Patent [19]

Krupke et al.

Patent Number:

6,134,835

Date of Patent:

Oct. 24, 2000

[54]	COUNTERDA		
10.1	COUNTERBALANCE SYSTEM FOR UPWARD ACTING DOOR	5,239,777	8/1993
		5,275,223	1/1994
[,5]	Inventors: LeRoy G. Krupke, Carrollton; D. Scott Boucher, Rowlett, Lebes 70.	5,419,010	
	Boucher, Rowlett; John E. Scates,	5,577,544	11/1996
	Carrollton, D Scates,	5,632,063	5/1007

Carrollton; Richard K. Hoofard, Dallas, all of Tex.

[73] Assignee: Overhead Door Corporation, Dallas,

[21] Appl. No.: 09/096,663

[22] Filed: Jun. 12, 1998 [51] Int. Cl.⁷ E05F 11/00 [52] U.S. Cl.

[58] Field of Search 49/197, 200; 160/191, 160/192, 201; 16/DIG. 1 [56]

References Cited

U.S. PATENT DOCUMENTS

	0.5.17	TENT DOCUMENTS
2,257,484	9/1941	Rowe
2,294,360	9/1942	Rowe 160/191
2,786,231	3/1957	Diougell
3,038,535	6/1962	Robinson 160/191
3,412,423	11/1968	- a cup et al
4,731,905	3/1988	
4.817,927		
4,852,378	8/1989	
4,882,806		73/270
4,930,182		
4,981,165		
		Miller et al 16/198

2,030,078	5/1995 11/1996 5/1997 6/1997	Husselton Magro et al. Mullet Carper et al. Carper et al. Carper et al. Balk	160/191 16/198 160/191 16/198
imary Exami	man D		10//2

Primary Examiner—Daniel P. Stodola Assistant Examiner—Curtis A. Cohen Attorney, Agent, or Firm-Akin, Gump. Strauss, Hauer &

[57]

ABSTRACT

A counterbalance system for an upward-acting door includes spaced-apart wall brackets and cable drums supported on the brackets and connected to flexible cables which depend from the drums and connected to the lower side edges of an upward-acting sectional garage door. One or both of the cable drums may be connected to one end of a torsion coil spring and the opposite end of each spring is connected to a hub assembly. Elongated spring winding and protective cover tubes are sleeved over the springs and are connected to the brackets by worm-gear drive winding mechanisms, respectively, for rotating the tubes to effect winding of the torsion coil springs through the hub assemblies but preventing rotation of the tubes during normal operation of the counterbalance system. The cable drums and spring hub assemblies may be supported on an elongated synchronizing shaft or a torque transfer shaft extending between and supported on the wall brackets.

33 Claims, 10 Drawing Sheets

